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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional): KELR-38477

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]

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Application Number	Filed
10542075	2006-01-23

First Named Inventor: Jurgen Weichart

Art Unit	Examiner
1792	Ram N. Kackar

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- ☐ applicant/inventor.
- ☐ assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- ☑ attorney or agent of record. Registration number 48719.
- ☐ attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____

/stevenjsolomon/
Signature

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Typed or printed name

216-579-1700
Telephone number

November 19, 2009
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

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Attachment to form PTO/SB/33
Pre-Appeal Brief Request for Review
Serial No. 10/542,075

Summary of Independent Claims

Each of the independent claims 1, 11, 15 and 20 recites a frame with a carrier clamped in the frame for holding and/or transporting a substrate. The carrier in each of the independent claims is made of a nonconductive material having a conductive layer. In claims 1, 15 and 20, the conductive layer of the carrier and a chuck electrode form a plate-type capacitive circuit when positioned adjacently and connected to a voltage source so that the carrier and frame in which it is clamped are electrostatically retained. The conductive layer of the carrier in claim 11 also is so effective. This structure permits transport of a substrate between processing stations without manipulating the substrate itself (which is fragile). Instead, the carrier undergoes repeated electrostatic forces and the frame undergoes physical manipulations of transporting the entire assembly (including a secured substrate) between stations. The substrate is spared these manipulations and any corresponding damage.

Rejections over Tokisue and combination references

The aforementioned independent claims stand rejected under 35 USC § 103(a) as being obvious over Tokisue, either alone or in combination with other references. In every case, the Examiner takes the position that Tokisue discloses a carrier clamped in a frame. This is incorrect.

Summary of Tokisue

Tokisue discloses a handling device for transporting a wafer 1' between processing stations in a "semiconductor producing apparatus of a multi-chamber type…shown in Fig. 2." Col. 4, lines 28-30. The handling device includes a hand body 2 having "a holder surface 2A for attractively holding the object 1 [such as wafer 1']" while being transported. Tokisue discloses numerous embodiments of the holder of the hand body, including the two illustrated in Figs. 19 and 20 cited by the Examiner. The wafer is electrostatically attracted to surface 2A during transport.

The holder embodiments shown in Figs. 19 and 20 do not include a frame and a carrier clamped in a frame to secure the substrate (wafer 1') for transport. Tokisue discloses no separate frame or carrier clamped in the frame for transporting the wafer 1' or to which the wafer 1' is secured. Nothing in Tokisue (either the specification or drawings) remotely suggests otherwise, and the Examiner cannot simply infer from the drawings a carrier clamped in a frame without any basis in the reference to do so.

Tokisue does not disclose a carrier clamped in a frame

Sustaining the Examiner's rejections requires reading out of the claims the structural

features of a "frame" and carrier "clamped in" the frame. At p. 3 of the Office action the Examiner states that "applicant has used the terms like 'frame' and 'clamp' in a special way different from the way they are used commonly." Then he asserts that the term 'frame' is used merely to connote an electrical connector to provide a conductive path to the carrier plate, and that the term 'clamp' simply refers to the function of providing a conductive path to the carrier plate. Office action, at p. 3. The Examiner has ignored the plain structural meaning of "frame" and "clamped" as set forth in the claims, and ascribed his own meaning to them. He has taken it upon himself to be the applicant's lexicographer to redefine the terms "frame" and "clamped" in the claims. This goes far beyond giving the claim terms their broadest reasonable interpretation. To construe the structural terms "frame" and "clamped" in such a way that no frame structure is required, and that no separate carrier need be actually clamped in the frame as claimed, completely vitiates those features from the claims as if they were not even there. This is not permitted to construct a rejection.

In the claims, a carrier having or adapted to have a substrate secured thereto is clamped into a frame. The carrier has a conductive layer capable to form a capacitive circuit with a chuck electrode to retain the entire carrier assembly (frame, carrier clamped in the frame and substrate secured to the carrier surface) in position adjacent the chuck electrode. Tokisue does not teach this combination of features. To overcome this deficiency, the Examiner has simply construed the "frame" and "clamped" claim limitations in such a way that the associated structure is not required, enabling him to make a rejection. Namely, construing "frame" to mean nothing more than providing a conductive pathway has allowed the Examiner to construe that term to refer to spring element 5 in Tokisue, which is a conductor between a voltage source and the wafer 1' to attract the wafer 1' when energized. *See* Office action dated March 27, 2009 at pp. 4-5. Also, construing "clamped" to mean nothing more than providing a path to the carrier plate apparently allows the Examiner to construe the "clamped" language to refer to the conductor 9 (best guess – the Examiner does not indicate which feature in Tokisue is contemplated for "clamped"). This makes no sense.

When the claimed structural features of a carrier being clamped in a frame are accorded their reasonable meaning, the differences from Tokisue become clear. In Tokisue, the hand body (embodiments of which shown in Figs. 19 and 20) electrostatically attracts and retains the wafer 1' directly, not a separate carrier or frame, to transport the wafer 1' between processing stations. This will be evident from a careful reading of Tokisue in its entirety, as well as a review of its drawings in which the wafer 1' forms part of the electrostatic circuit; i.e. the wafer 1' itself is energized to be directly retained and then released. Conversely, in the claimed construction the substrate is secured

to a carrier having a conductive layer, and the carrier is clamped in a frame. It is the carrier, not the substrate itself as in Tokisue, that forms an electrostatic circuit with a chuck electrode to retain the secured substrate in position. There is no structure in Tokisue comparable to a carrier having a conductive layer to form part of the electrostatic circuit being clamped in a frame for transporting the substrate secured to the carrier.

In summary, Tokisue discloses neither a frame, nor a carrier clamped in the frame. To construct his rejection the Examiner has simply read the "frame" and "clamped" features out of the claims.

The Examiner incorrectly argues that ***a carrier clamped in a frame*** *as claimed is electrostatically retained to the grounded bed 16 in Tokisue*

At p. 6 of the Office action the Examiner states that "according to Figs. 20, 45, 46 and 48-50, a carrier is attached to a bed 16 by electrostatic means by connecting ground to bed 16 or as in Fig. 46 by providing embedded conductors for a bipolar electrostatic chuck. If the power is turned off and static charges removed the carrier separates. Therefore removal carrier is disclosed." The structure of Fig. 20 is discussed above; in that figure there simply is no carrier clamped in a frame. Likewise, having studied the remaining cited figures in detail, there also is no carrier made of a nonconductive dielectric material and having a conductive layer on one side, wherein the carrier is adapted to secure the substrate over its entire surface (opposite the conductive layer), and wherein this carrier is clamped in a frame. Fig. 46 is representative. In that figure "a semiconductor 19 is formed on the reverse side of the pallet body 70 via an electrode 3 and an insulating member 11." Tokisue, col. 11, lines 44-47. The only structure in Fig. 46 adapted to even contact a substrate (1) is the pallet body 70. This pallet body 70 is not clamped into anything; there certainly is no separate frame evident, nor is there any clamping structure. As will be readily understood, a "frame" is some structure that encloses or surrounds (i.e. 'frames') the 'framed' structure. In the claims, the carrier is "clamped in" the frame, consistent with the preceding sentence. There simply is no frame structure in Fig. 46 or any of the other cited figures in Tokisue. There also is no carrier clamped in a frame as claimed. The pallet body 70, the only structure in the cited figures that even contacts the wafer 1 (and therefore which might be comparable to the carrier in the claims), is not clamped into any other structure. It certainly has no other structure 'framing' it, such that it is "clamped in" a frame as claimed.

Nor does Tokisue disclose a carrier adapted to have the substrate secured over substantially its entire surface to the carrier, wherein the carrier itself is electrostatically retained by the chuck

electrode. In every embodiment in Tokisue, the substrate itself (wafer 1) forms an electrostatic surface so that it is retained by forces acting directly on it, not on some other structure as claimed. In every such embodiment, once the electrostatic forces are removed, e.g. to release the modified pallet shown in Figs 46-49 recently cited by the Examiner, the wafer 1 also will be released from the pallet body 70. In other words, the wafer 1' would fall off that pallet body 70, making that body unsuitable to transport the wafer 1' reliably as in the present application. This means the pallet body 70 cannot be a carrier adapted to have the substrate secured thereto as claimed. Conversely, in the present claims the substrate is adapted to be secured over substantially its entire surface to the carrier, for reliable transport thereof on the carrier between processing stations when no electrostatic force is applied to the carrier.

The advantages of having the substrate secured to a carrier are germane to the pending claims

During prosecution (and above) applicant has argued the advantages of securing the substrate to a carrier clamped in a frame, wherein the carrier/frame (and not the substrate itself) undergo the repeated stresses and external manipulations to attract and release the carrier and transport the entire assembly between processing stations. In response, the Examiner stated that "this issue is not commensurate with the scope of the claims." This is not true. All the independent claims 1, 11, 15 and 20 recite a frame with a carrier clamped in the frame to hold and/or transport the substrate. When the carrier clamped in a frame and having a conductive layer is positioned adjacent a chuck electrode and energized, the chuck electrode and conductive layer of the carrier will attract one another, holding the carrier/frame assembly (with secured substrate) in place. That is, the carrier (not the substrate) undergoes the repeated stresses of electrostatic attraction to a chuck electrode and the frame in which the carrier is clamped undergoes the stresses of external manipulations and impacts during transport. The substrate itself, which is secured to the carrier, is spared these stresses, manipulations and impacts. Accordingly, the advantages of the carrier/frame (and not the substrate) undergoing the stresses of securing and transporting the substrate are directly commensurate with the scope of the claims.

Summary regarding Tokisue's deficiencies

In summary, reading the conductive ceramic 20 or pallet body 70 in Tokisue as the claimed "carrier" does not answer the questions, 'where is the frame,' and 'how is the ceramic 20/body 70 clamped in that frame' in Tokisue. Spring element 5 is certainly not a frame, and the conductive

ceramic 20/body 70 is not clamped in the spring element 5. Finally, treating the conductive ceramic 20/body 70 as a "carrier" and the grounded bed 16 as a "chuck electrode" results in the wafer 1' falling off the ceramic 20/body 70 as soon as the voltage is removed at the end of a transport step. This means the ceramic 20/body 70 would not retain the wafer 1' secured thereto as claimed; i.e. neither is adapted to have the substrate secured over substantially its entire surface thereto as claimed.

Contrary to the Examiner's position, Tokisue is clearly deficient to teach any of the following features, either alone or in combination:

- a frame;

- a carrier clamped in the frame;

- a substrate being adhered over substantially its entire surface to the carrier; and

- the conductive layer of the carrier (not the substrate itself) and the surface of the chuck electrode forming two plates of a plate-type capacitor to retain the substrate.

None of the combination references is relied upon to teach any of the foregoing features.

Conclusion

For the above reasons, the rejections of the independent claims are clearly erroneous and should be withdrawn. The foregoing arguments are presented in greater detail in responses filed September 11, 2008, January 29, 2009 and June 25, 2009, which are incorporated herein. For brevity, those arguments are not completely re-stated here, but the panel is respectfully requested to review the aforementioned submissions in connection with this pre-appeal.